

IN THE CLAIMS:

1. (Currently amended) A non-blocking crossbar, comprising:

n inputs, n numbering at least two;

n outputs, each of said outputs having a destination first-in, first-out buffer (FIFO) and n crossbar FIFOs interposing corresponding ones of said n inputs and said destination FIFO; and

a scheduler configured to cause a packet that is one of a plurality of lengths to be transmitted from one of said inputs toward one of said outputs only when both said destination FIFO associated therewith and an interposing one of said crossbar FIFOs ~~are available~~ have sufficient memory to contain an entirety of said packet.
2. (Original) The non-blocking crossbar as recited in Claim 1 wherein said scheduler is further configured to select one of said inputs based upon a priority thereof.
3. (Original) The non-blocking crossbar as recited in Claim 1 wherein said scheduler is further configured to select one of said outputs based upon a priority thereof.
4. (Original) The non-blocking crossbar as recited in Claim 1 wherein at least two of said n inputs are coupled to different types of packet based fabrics.
5. (Currently amended) The non-blocking crossbar as recited in Claim 1 wherein ~~said~~ a first input and ~~said~~ a first output is coupled to a SONET network, ~~said~~ a second input and ~~said~~ a

second output is coupled to a Gigabit Ethernet network, and said a third input and said a third output is coupled to another Gigabit Ethernet network.

6. (Original) The non-blocking crossbar as recited in Claim 1 wherein each of said outputs further comprises an output arbiter configured to select one of said crossbar FIFOs and transfer a packet therein to said destination FIFO.

7. (Original) The non-blocking crossbar as recited in Claim 6 wherein said output arbiter is further configured to select said one of said crossbar FIFOs based upon packet priority.

8. (Currently amended) A method of operating a non-blocking crossbar, comprising:
employing n inputs, n numbering at least two;
employing n outputs, each of said outputs having a destination first-in, first-out buffer (FIFO) and n crossbar FIFOs interposing corresponding ones of said n inputs and said destination FIFO; and

scheduling a packet that is one of a plurality of lengths to be transmitted from one of said inputs toward one of said outputs only when both said destination FIFO associated therewith and an interposing one of said crossbar FIFOs ~~are available~~ have sufficient memory to contain an entirety of said packet.

9. (Currently amended) The method as recited in Claim 8 wherein said scheduling further comprises selecting one of said inputs based upon a priority thereof.

10. (Original) The method as recited in Claim 8 wherein said scheduling further comprises selecting one of said outputs based upon a priority thereof.

11. (Original) The method as recited in Claim 8 wherein at least two of said n inputs are coupled to different types of packet based fabrics.

12. (Currently amended) The method as recited in Claim 8 wherein said a first input and said a first output is coupled to a SONET network, said a second input and said a second output is coupled to a Gigabit Ethernet network, and said a third input and said a third output is coupled to another Gigabit Ethernet network.

13. (Currently amended) The method as recited in Claim 8 further comprising selecting one of said crossbar FIFOs and ~~transferring~~ transferring a packet therein to said destination FIFO.

14. (Original) The method as recited in Claim 13 wherein said selecting further comprises selecting said one of said crossbar FIFOs based upon packet priority.

15. (Currently amended) A multi-channel network line card for packet based networks, comprising:

n physical interfaces, n numbering at least three;

n network processors that converts a packet between protocols, each of said network processors coupled to corresponding ones of said n physical interfaces; and

a non-blocking crossbar coupled to said network processors and said physical interfaces, including:

n inputs that receive said packet from corresponding ones of said n network processors,

n outputs that transmit said packet to corresponding ones of said n physical interfaces, each of said outputs having a destination first-in, first-out buffer (FIFO) and n crossbar FIFOs interposing corresponding ones of said n inputs and said destination FIFO, and

a scheduler that causes said packet that is one of a plurality of lengths to be transmitted from one of said inputs toward one of said outputs only when both said destination FIFO associated therewith and an interposing one of said crossbar FIFOs are available have sufficient memory to contain an entirety of said packet.

16. (Currently amended) The multi-channel network line card as recited in Claim 15 wherein said network processors further include:

a fast pattern processor that receives said packet from corresponding ones of said n physical interfaces, said fast pattern processor analyzes and classifies said packet; and

a routing switch processor that ~~process~~ processes said packet classified by said fast pattern processor, performs traffic management and converts said packet into an appropriate network protocol.

17. (Original) The multi-channel network line card as recited in Claim 15 wherein said scheduler selects one of said inputs based upon a priority thereof and selects one of said outputs based upon a priority thereof.

18. (Original) The multi-channel network line card as recited in Claim 15 wherein at least two of said n inputs are coupled to different types of packet based networks.

19. (Currently amended) The multi-channel network line card as recited in Claim 15 wherein said a first physical interface is coupled to a SONET network, said a second physical interface is coupled to a Gigabit Ethernet network, and said a third physical interface is coupled to another Gigabit Ethernet network.

20. (Original) The multi-channel network line card as recited in Claim 15 wherein each of said outputs further comprises an output arbiter configured to select one of said crossbar FIFOs based upon packet priority and transfer a packet therein to said destination FIFO.